AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for diagnosing the possibility of disease in a body part, the method comprising

providing an electrode array containing a plurality of electrodes capable of being electrically coupled to the body part;

providing anthropometric data indicative of adequate coupling between the electrodes and the body part;

making a bipolar electrode assessment measurement with the electrode array by utilizing one current injection electrode of a current injection electrode pair and one proximal voltage measurement electrode of a voltage measurement electrode pair;

determining whether the plurality of electrodes are suitably coupled to the body part based on a comparison of the bipolar electrode assessment measurement to ~~a known value~~ the anthropometric data;

making a diagnosis measurement with the electrode array;

obtaining an electrical property of the body part based on the diagnosis measurement; and

diagnosing the possibility of disease based on the electrical property of the body part.

2. (Original) The method of claim 1, wherein the plurality of electrodes includes a current injection electrode pair and an associated voltage measurement electrode pair, the method further comprising, before the step of making an electrode assessment measurement,

applying the current injection electrode pair to the body part; and

applying the associated voltage measurement electrode pair to the body part.

3. (Cancelled)

4. (Previously Presented) The method of claim 2, wherein the step of determining whether the plurality of electrodes are suitably coupled includes

computing a phase ϕ, whose absolute value is given by

$$|\phi| = \left|\tan^{-1}[X_C(\omega)/R]\right|$$

where $X_C(\omega)$ is a capacitive reactance at an alternating frequency, ω, of a current injected during the bipolar measurement, and R is a resistance associated with the body part; and

if the phase is outside a threshold range, determining that at least one of the current injection electrode and the voltage measurement electrode is not in electrical contact with the body part.

5. (Original) The method of claim 4, wherein the step of determining whether the plurality of electrodes are suitably coupled further includes

computing a magnitude Z given by

$$Z = \left|\frac{V}{I}\right|,$$

where I is the current and V is a resultant voltage measured during the bipolar measurement; and

determining quality of electrical contact of the current injection electrode and the voltage measurement electrode with the body part based on the magnitude.

6. (Original) The method of claim 3, wherein the step of determining includes using a phase, which is a function of the capacitive reactance and the resistance, at a particular frequency, and other phases at other frequencies to establish that at least one of the current injection electrode and the voltage measurement electrode is not in electrical contact with the body part.

7. (Original) The method of claim 1, wherein the plurality of electrodes includes n_{CI} current injection electrode pairs, and n_{CI} associated voltage measurement electrode pairs, where n_{CI} is an integer greater than zero.

8. (Original) The method of claim 7, wherein the step of making a diagnosis measurement includes

applying the n_{CI} current injection electrode pairs on the body part; and

applying the n_{CI} voltage measurement electrode pairs on the body part.

9. (Original) The method of claim 8, wherein the step of making a diagnosis measurement further includes

injecting a first current between a first pair of the n_{CI} current injection electrode pairs;

measuring the resultant voltage difference V_1^M between the voltage measurement electrode pair associated with the first current injection electrode pair; and

repeating the preceding two steps of injecting and measuring with the other electrode pairs until all n_{CI} voltage differences, $\{ V_1^M , V_2^M ,\ldots, V_{n_{CI}}^M \}$ are obtained.

10. (Original) The method of claim 9, wherein the electrical property is impedance.

11. (Original) The method of claim 10, wherein the step of obtaining includes using the n_{CI} voltage differences to obtain associated measured impedances, { Z_1^M , Z_2^M ,..., $Z_{n_{CI}}^M$ }, where Z_j^M is the measured impedance between the voltage electrodes associated with the *j*th current injection electrode pair.

12. (Original) The method of claim 1, further comprising indicating a status of the coupling between the plurality of electrodes and the body part with a graphical user interface.

13. (Currently Amended) A system for diagnosing the possibility of disease in a body part, the system comprising

an electrode array containing a plurality of electrodes capable of being electrically coupled to the body part;

a memory module containing anthropometric data indicative of adequate coupling between the electrodes and the body part;

a first measurement unit for making a bipolar electrode assessment measurement with the electrode array, that utilizes one current injection electrode of a current injection electrode pair and one proximal voltage measurement electrode of a voltage measurement electrode pair;

an electrode assessment module for determining whether the plurality of electrodes are suitably coupled to the body part based on a comparison of the bipolar electrode assessment measurement to ~~a known value~~ the anthropometric data;

a second measurement unit for making a diagnosis measurement with the electrode array; and

an electrical property module for obtaining an electrical property of the body part based on the diagnosis measurement, wherein the electrical property is used to diagnose the possibility of disease.

14. (Original) The system of claim 13, wherein the plurality of electrodes includes a current injection electrode pair and an associated voltage measurement electrode pair that are applied to the body part.

15. (Cancelled)

16. (Previously Presented) The system of claim 14, wherein the electrode assessment module includes

a phase module for obtaining a phase, ϕ, from the bipolar measurement, whose absolute value is given by

$$|\phi| = \left|\tan^{-1}[X_C(\omega)/R]\right|$$

where $X_C(\omega)$ is a capacitive reactance at an alternating frequency, ω, of a current injected during the bipolar measurement, and R is a resistance associated with the body part; and

a contact module for determining that at least one of the current injection electrode and the voltage measurement electrode is not in electrical contact with the body part if the phase is outside a threshold range.

17. (Original) The system of claim 16, wherein the electrode assessment module includes

a magnitude module for computing a magnitude, Z, from the bipolar measurement, the magnitude given by

$$Z = \left| \frac{V}{I} \right|,$$

where I is the current and V is a resultant voltage measured during the bipolar measurement; and

a quality module for determining quality of electrical contact of the current injection electrode and the voltage measurement electrode with the body part based on the magnitude.

18. (Original) The system of claim 15, wherein the electrode assessment module includes

a phase module for obtaining a phase that is a function of a capacitive reactance, at a particular frequency, and a resistance, associated with the body part, and for obtaining other phases at other frequencies; and

a contact module for determining that at least one of the current injection electrode and the voltage measurement electrode is not in electrical contact with the body part based on the phase at the particular frequency and the other phases at the other frequencies.

19. (Original) The system of claim 13, wherein the plurality of electrodes includes n_{CI} current injection electrode pairs and n_{CI} associated voltage measurement electrode pairs that are applied to the body part.

20. (Original) The system of claim 19, wherein the second measurement unit injects a first current between a first pair of the n_{CI} current injection electrode pairs, measures the resultant voltage difference V_1^M between the voltage measurement electrode pair associated with the first current injection electrode pair, and repeats the preceding two steps of current injection and voltage difference measurement with the other electrode pairs until all n_{CI} voltage differences, $\{ V_1^M , V_2^M ,..., V_{n_{CI}}^M \}$ are obtained.

21. (Original) The system of claim 20, wherein the electrical property is impedance, and the electrical property module is an impedance module.

22. (Original) The system of claim 21, wherein the impedance module uses the n_{CI} voltage differences to obtain associated measured impedances, $\{ Z_1^M , Z_2^M ,..., Z_{n_{CI}}^M \}$, where Z_j^M is the measured impedance between the voltage electrodes associated with the *j*th current injection electrode pair.

23. (Original) The system of claim 22, further comprising a diagnosis module for utilizing the measured impedances, $\{ Z_1^M , Z_2^M ,..., Z_{n_{CI}}^M \}$ to diagnose the possibility of disease.

24. (Original) The system of claim 13, further comprising a graphical user interface to indicate a status of the coupling between the plurality of electrodes and the body part.